REMARKS

Claims 1-27 were presented for examination. Claims 1-3, 8-9, 12-14 and 17-23 have been rejected under 35 U.S.C. § 102(b). Claims 4-7, 10-11, 15-16 and 24-27 have been rejected under 35 U.S.C. § 103(a). The following comments address all stated grounds for rejection, and place the presently pending claims, as identified above, in condition for allowance.

I. Claims Rejected Under 35 U.S.C. § 102(b)

Claims 1-3, 8-9, 12-14 and 17-23 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,502,458 (Braudaway). Claims 1, 13, 18 and 20 are independent claims. Claims 2-3, 8-9 and 12 depend on claim 1. Claims 14 and 17 depend on claim 13. Claim 19 depends on claim 18. Claims 21-23 depend on claim 20. Applicant respectfully traverses this rejection.

A. Claims 1-3, 8-9 and 12

Claim 1 is directed to a method in an electronic device. Claim 1 includes the steps of providing input color data for a group of pixels in an input color space and building an intermediate table for storing the input color data. The input color data is stored at an indexed position and the indexed position is responsive to the input color data. Claim 1 also includes the step of converting the input color data in the intermediate table to an output color data in an output color space. The same input color data in different pixels is stored once in the intermediate table to avoid repeated conversion calculations for different pixels that have the same input color data. Claim 1 further includes the step of substituting the output color data for the input color data for each pixel in the group of pixels.

Braudaway discusses creating a display-independent image for presentation on displays controlled by a display adapter that contains a display independent palette such that the display-independent image is displayed faithfully on each display. Braudaway selects a standard display and then determines "the matrix of transformation that ***converts*** colors expressed in CIE XYZ values to the RGB values of the display's phosphors." [Emphasis Added] *(Braudaway Col. 5, Lines 3-5)*. Braudaway discloses that the matrix is determined by "***measuring*** the XYZ values of the individual red, green and blue display phosphors, ***each driven with a full-on digital driving signal, and 'display white,'*** which is the combination of all three phosphors with their

full-on driving signals." [Emphasis Added] (*Braudaway Col. 5, Lines 7-11*). To convert colors expressed in XYZ values to RGB values Braudaway discloses "***multiplying each pixel XYZ value by the matrix M* to get a display-independent RGB tristimulus value for that pixel***." [Emphasis Added] (*Braudaway Col. 9, Lines 41-44*).

Braudaway does not disclose the step of:

> "converting the input color data in the intermediate table to an output color data in an output color space, wherein *the same input color data in different pixels is stored once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color data*," as required by claim 1. [Emphasis Added]

The Examiner states, on pages 2-3 of the Office Action, that Braudaway discloses "the same input color data in different pixels is stored once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color data" because "*the use of a transform matrix means that different pixels with the same input values are converted without the need for repeated conversion calculations*." However, Braudaway does not disclose that the use of the matrix means that different pixels with the same input values are converted without the need for repeated conversion calculations. Rather, Braudaway discloses that the XYZ values are converted to RGB values by "***multiplying each pixel XYZ value by the matrix M* to get a display-independent RGB tristimulus value for that pixel***." As such, Braudaway does not disclose "the same input color data in different pixels is stored once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color data," as required by claim 1.

Further, Braudaway does not disclose the step of "*building an intermediate table for storing the input color data*," as required by claim 1.

The Examiner states that Brauadaway discloses "building an intermediate table (display-independent matrix) for storing the input color data," on page 2 of the Office Action. The matrix disclosed by Braudaway is not an intermediate table ***for storing input color data***, as required by claim 1. Rather, the matrix represents the measured "XYZ values of the individual red, green

and blue display phosphors, ***each driven with a full-on digital driving signal, and 'display white,'*** which is the combination of all three phosphors with their full-on driving signals." As such, the matrix of Braudaway is based only on full-on digital driving signals. In contradiction to the Examiners argument, Braudaway discloses the XYZ's of each pixel in the desired image are converted to RGB values using the matrix, where such conversion is performed by multiplying the XYZ values for each pixel by the matrix. The matrix of Braudaway never stores input color data, as required by the intermediate table of claim 1, but rather, is used to convert XYZ values to RGB values by multiplying the XYZ values by a predetermined matrix.

For at least these reasons, Applicant respectfully submits that Braudaway does not disclose all of the patentable features of claim 1. Claims 2-3, 8-9 and 12 depend on claim 1, and therefore incorporate all of the patentable features of claim 1. Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of Claims 1-3, 8-9 and 12 under 35 U.S.C. § 102(b).

B. Claims 13-14 and 17

Claim 13 is directed to a method in a electronic device. Claim 13 includes the step of providing a set of input color data for pixels, where the input color data encodes colors for the pixels in a first color space. Claim 13 also includes the steps of determining an index for each pixel based on the color data for the pixel and building an intermediate table for holding the input color data at a position of the index. Claim 13 further includes the step of converting the input color data in the intermediate table into an output color data in a second color space, where the same input color data in different pixels is held once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color data. In addition, claim 13 recites the step of substituting the output color data for the input color data for each pixel.

Braudaway does not disclose the step of:

> "converting the input color data in the intermediate table into an output color data in a second color space, wherein *the same input color data in different pixels is held once in the intermediate table to avoid repeated conversion calculations for the different pixels*

> *having the same input color data,*" as required by claim 13. [Emphasis Added]

The Examiner states, on pages 3 of the Office Action, that Braudaway discloses "the same input color data in different pixels is held once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color data" **because** "*the use of a transform matrix means that different pixels with the same input values are converted without the need for repeated conversion calculations.*" However, Braudaway does not disclose that the use of the matrix means that different pixels with the same input values are converted without the need for repeated conversion calculations. Rather, Braudaway discloses that the XYZ values are converted to RGB values by "***multiplying each pixel XYZ value by the matrix M* to get a display-independent RGB tristimulus value for that pixel***." As such, Braudaway does not disclose "the same input color data in different pixels is stored once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color data," as required by claim 13.

Further, Braudaway does not disclose the step of "*building an intermediate table for holding the input color data at a position of the index*," as required by claim 13.

The Examiner states that Brauadaway discloses "building an intermediate table (display-independent matrix) for holding the input color data at a position of the index," on page 3 of the Office Action. The matrix disclosed by Braudaway is not an intermediate table ***for storing input color data at a position of the index***, as required by claim 1. Rather, the matrix represents the measured "XYZ values of the individual red, green and blue display phosphors, ***each driven with a full-on digital driving signal, and 'display white,'*** which is the combination of all three phosphors with their full-on driving signals." As such, the matrix of Braudaway is based only on full-on digital driving signals. In contradiction to the Examiners argument, Braudaway discloses the XYZ's of each pixel in the desired image are converted to RGB values using the matrix, where such conversion is performed by multiplying the XYZ values for each pixel by the matrix. The matrix of Braudaway never stores input color data, as required by the intermediate table of claim 1, but rather, is used to convert XYZ values to RGB values by multiplying the XYZ values by a predetermined matrix.

For at least these reasons, Applicant respectfully submits that Braudaway does not disclose all of the patentable features of claim 13. Claims 14 and 17 depend on claim 13, and therefore incorporate all of the patentable features of claim 13. Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of Claims 13-14 and 17 under 35 U.S.C. § 102(b).

C. Claims 18 and 19

Claim 18 is directed to a device for converting color representations of a set of pixels. The device includes a storage facility and a conversion facility. The storage facility stores an intermediate table that table holds input color representations of a set of pixels at positions of indices. The indices are responsive to the color representations of the set of pixels. The conversion facility converts the input color representations of the set of pixels in the intermediate table to output color representations in a second color space. For different pixels with the same input color representation, the same input color representation is stored once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color representation.

Braudaway does not disclose the storage facility of claim 18. More specifically, Braudaway does not disclose that a storage facility to store *an intermediate table that holds input color representations of a set of pixels at positions of indices*, where the indices are responsive to the color representations of the set of pixels, as required by claim 18.

The Examiner states that Brauadaway discloses "building an intermediate table (display-independent matrix) for holding the input color data at a position of the index," on page 3 of the Office Action. The matrix disclosed by Braudaway is not an intermediate table ***for storing input color data at a position of the index***, as required by claim 1. Rather, the matrix represents the measured "XYZ values of the individual red, green and blue display phosphors, ***each driven with a full-on digital driving signal, and 'display white,'*** which is the combination of all three phosphors with their full-on driving signals." As such, the matrix of Braudaway is based only on full-on digital driving signals. In contradiction to the Examiners argument, Braudaway discloses the XYZ's of each pixel in the desired image are converted to RGB values using the

matrix, where such conversion is performed by multiplying the XYZ values for each pixel by the matrix. The matrix of Braudaway never stores input color data, as required by the intermediate table of claim 1, but rather, is used to convert XYZ values to RGB values by multiplying the XYZ values by a predetermined matrix.

Braudaway does not disclose the conversion facility of claim 18. More specifically, Braudaway does not disclose a conversion facility wherein *the same input color representation in different pixels is stored once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color representation*. Rather, Braudaway discloses that the XYZ values are converted to RGB values by "***multiplying each pixel XYZ value by the matrix M* to get a display-independent RGB tristimulus value for that pixel***." As such, Braudaway does not disclose the conversion facility required by claim 18.

For at least these reasons, Applicant respectfully submits that Braudaway does not disclose all of the patentable features of claim 18. Claim 19 depends on claim 18, and therefore incorporates all of the patentable features of claim 18. Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of Claims 18-19 under 35 U.S.C. § 102(b).

D. Claims 20-23

Claim 20 is directed to an improved method of converting color image data for a group of pixels from a first color space to a second color space. Claim 20 includes the step of mapping input color image data for the group of pixels in the first color space to indices, where the input color image data is stored in an intermediate table at positions of the indices. Claim 20 also includes the step of converting the input color image data in the intermediate table to an output color image data in the second color space, where the same input color image data in different pixels is stored once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color image data. Claim 20 further includes reconstructing the group of pixels in the second color space using the output color data.

Braudaway does not disclose the step of:

> "converting the input color image data in the intermediate table to an output color image data in the second color space, wherein *the*

> *same input color image data in different pixels is stored once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color image data.*," as required by claim 20. [Emphasis Added]

The Examiner states, on pages 4 of the Office Action, that Braudaway discloses "the same input color data in different pixels is stored once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color data" **because** "*the use of a transform matrix means that different pixels with the same input values are converted without the need for repeated conversion calculations.*" However, Braudaway does not disclose that the use of the matrix means that different pixels with the same input values are converted without the need for repeated conversion calculations. Rather, Braudaway discloses that the XYZ values are converted to RGB values by "***multiplying each pixel XYZ value by the matrix M* to get a display-independent RGB tristimulus value for that pixel***." As such, Braudaway does not disclose "the same input color data in different pixels is stored once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color data," as required by claim 20.

Further, Braudaway does not disclose the step of "mapping input color image data for the group of pixels in the first color space to indices , wherein *the input color image data is stored in an intermediate table at positions of the indices*," as required by claim 20.

The Examiner states that Brauadaway discloses "the input color image data is stored in an intermediate table (display-independent matrix) at positions of the indices," on page 4 of the Office Action. The matrix disclosed by Braudaway is not an intermediate table that ***stores input color image data at positions of the indices***, as required by claim 20. Rather, the matrix represents the measured "XYZ values of the individual red, green and blue display phosphors, ***each driven with a full-on digital driving signal, and 'display white,'*** which is the combination of all three phosphors with their full-on driving signals." As such, the matrix of Braudaway is based only on full-on digital driving signals. In contradiction to the Examiners argument, Braudaway discloses the XYZ's of each pixel in the desired image are converted to RGB values using the matrix, where such conversion is performed by multiplying the XYZ values for each

pixel by the matrix. The matrix of Braudaway never stores input color data, as required by the intermediate table of claim 1, but rather, is used to convert XYZ values to RGB values by multiplying the XYZ values by a predetermined matrix.

For at least these reasons, Applicant respectfully submits that Braudaway does not disclose all of the patentable features of claim 20. Claims 21-23 depend on claim 20, and therefore incorporate all of the patentable features of claim 20. Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of Claims 20-23 under 35 U.S.C. § 102(b).

II. Claims Rejected Under 35 U.S.C. § 103(a)

Claims 4-7, 10-11, 15-16 and 24-27 have been rejected under 35 U.S.C. § 103(a) as being obvious. Applicant respectfully traverses this rejection for reasons discussed below.

A. Claims 4-5, 10-11, 16 and 24-25

Claims 4-5, 10-11, 16 and 24-25 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Braudaway in view of U.S. Patent No. 5,579,031 (Liang). Applicant respectfully traverses this rejection.

Liang teaches a process for producing two matched color displays of a digital image using two different display devices. Liang uses an adaptor to convert the digital information representing the image to digital information such that the displayed image as a result of this converted digital information on one of the devices, appears the same as the image displayed on the other.

Neither Braudaway nor Liang teach or suggest, alone or in combination, all of the features of independent claims 1, 13 and 20. More specifically, claims 1, 13 and 20 require that the same input color image data in different pixels is stored or held *once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color image data*. Braudaway teaches XYZ values are converted to RGB values by "***multiplying each pixel XYZ value by the matrix M* to get a display-independent RGB tristimulus value for that pixel***." Liang teaches producing two matched color displays of a

digital image using two different display devices. As such, neither Braudaway nor Liang teach avoiding repeated conversion calculations for different pixels having the same input color image.

Further, neither Braudaway nor Liang teach or suggest, alone or in combination, *an intermediate table for storing or holding the input color data*, as required by independent claims 1, 13 and 30. Rather, Braudaway teaches a matrix with predetermined values for converting XYZ values to RGB by multiplying the XYZ values by the matrix and Liang teaches producing two matched color displays of a digital image using two different display devices. As such, neither Braudaway nor Liang teach or suggest the intermediate table required by claims 1, 13 and 20

In addition, Braudaway teaches away from the claimed invention. The claimed invention requires that the same input color image data in different pixels is stored or held *once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color image data*. Braudaway, however, teaches "***multiplying each pixel XYZ value by the matrix M* to get a display-independent RGB tristimulus value for that pixel***." The multiplying of each XYZ pixel by the matrix to convert from XYZ values to RGB values may result in unnecessary conversion calculations. The claimed invention, however, avoids unnecessary conversion calculations by only having to convert pixels with the same input color image data once. As a result, the claimed invention saves time when processing input color image data.

For at least these reasons neither Braudaway nor Liang teach or suggest, alone or in combination, all of the patentable features of claims 1, 13 and 20. Claims 4-5 and 10-11 depend on claim 1, and therefore incorporate all of the patentable features of claim 1. Claim 16 depends on claim 13, and therefore incorporates all of the patentable features of claim 13. Claims 24-25 depend on claim 20, and therefore incorporate all of the patentable features of claim 20. Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of Claims 4-5, 10-11, 16 and 24-25 under 35 U.S.C. § 103(a).

B. Claims 6-7, 15 and 26-27

Claims 6-7, 15 and 26-27 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Braudaway in view of U.S. Patent No. 5,668,890 (Winkelman). Applicant respectfully traverses this rejection.

Winkelman teaches a method for analyzing an image. Winkelman teaches the image values of a first color space allocated to the input apparatus are transformed into image values of a second color space that is independent of the first color space. Winkelman teaches that the analysis of the image is implemented on the basis of the transformed image values of the second color space.

Neither Braudaway nor Winkelman teach or suggest, alone or in combination, all of the features of independent claims 1, 13 and 20. More specifically, claims 1, 13 and 20 require that the same input color image data in different pixels is stored or held *once in the intermediate table to avoid repeated conversion calculations for the different pixels having the same input color image data.* Braudaway teaches XYZ values are converted to RGB values by "***multiplying each pixel XYZ value by the matrix M* to get a display-independent RGB tristimulus value for that pixel***." Winkelman teaches that the analysis of the image is implemented on the basis of the transformed image values of the second color space. Neither Braudaway nor Winkelman teach or suggest avoiding repeated conversion calculations for different pixels having the same input color image data.

Further, neither Braudaway nor Winkelman teach or suggest, alone or in combination, *an intermediate table* for storing or holding the input color data, as required by independent claims 1, 13 and 30. Rather, Braudaway teaches a matrix with predetermined values for converting XYZ values to RGB by multiplying the XYZ values by the matrix and Winkelman teaches that the analysis of the image is implemented on the basis of the transformed image values of the second color space. Neither Braudaway nor Winkelman teach or suggest the intermediate table as required by claims 1, 13 and 20.

In addition, Braudaway teaches away from the claimed invention. The claimed invention requires that the same input color image data in different pixels is stored or held *once in the*

intermediate table to avoid repeated conversion calculations for the different pixels having the same input color image data. Braudaway, however, teaches "***multiplying each pixel XYZ value by the matrix M* to get a display-independent RGB tristimulus value for that pixel***." The multiplying of each XYZ pixel by the matrix to convert from XYZ values to RGB values may result in unnecessary conversion calculations. The claimed invention, however, avoids unnecessary conversion calculations by only having to convert pixels with the same input color image data once. As a result, the claimed invention saves time when processing input color image data.

For at least these reasons neither Braudaway nor Winkelman teach or suggest, alone or in combination, all of the patentable features of claims 1, 13 and 20. Claims 6-7 depend on claim 1, and therefore incorporate all of the patentable features of claim 1. Claim 15 depends on claim 13, and therefore incorporates all of the patentable features of claim 13. Claims 26-27 depend on claim 20, and therefore incorporate all of the patentable features of claim 20. Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of Claims 6-7, 15 and 26-27 under 35 U.S.C. § 103(a).

CONCLUSION

In view of the above remarks, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

By [signature]

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